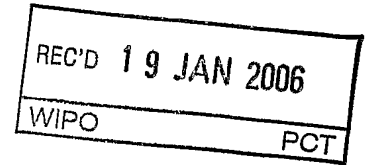


# PATENT COOPERATION TREATY

## PCT

**INTERNATIONAL PRELIMINARY  
REPORT ON PATENTABILITY**  
(Chapter II of the Patent Cooperation Treaty)  
(PCT Article 36 and Rule 70)



Applicant's or agent's file reference PA-04069/PCT	<b>FOR FURTHER ACTION</b>	See Form PCT/IPEA/416
International application No. PCT/JP2005/002533	International filing date (day/month/year) 10.02.2005	Priority date (day/month/year) 12.02.2004
International Patent Classification (IPC) or national classification and IPC Int.Cl. F28F19/06 (2006.01), B23K1/00 (2006.01), B23K1/19 (2006.01), B23K1/20 (2006.01), F25B39/00 (2006.01), F28F1/02 (2006.01), F28F1/30 (2006.01), F28F19/02 (2006.01), F28F21/08 (2006.01), B23K101/14 (2006.01)		
Applicant SHOWA DENKO K.K.		

1.	This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.
2.	This REPORT consists of a total of <u>4</u> sheets, including this cover sheet.
3.	This report is also accompanied by ANNEXES, comprising: <div style="margin-left: 20px;"> a. <input type="checkbox"/> a total of _____ sheets, as follows: <div style="margin-left: 20px;"> <input type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions). <input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box. </div> </div> b. <input type="checkbox"/> a total of (indicate type and number of electronic carrier(s)) _____, containing a sequence listing and/or tables related thereto, in electronic form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).
4.	This report contains indications relating to the following items: <div style="margin-left: 20px;"> <input checked="" type="checkbox"/> Box No. I Basis of the report  <input type="checkbox"/> Box No. II Priority  <input type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability  <input type="checkbox"/> Box No. IV Lack of unity of invention  <input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement  <input type="checkbox"/> Box No. VI Certain documents cited  <input type="checkbox"/> Box No. VII Certain defects in the international application  <input type="checkbox"/> Box No. VIII Certain observations on the international application </div>

Date of submission of the demand 19.08.2005	Date of completion of this report 05.01.2006
Name and mailing address of the IPEA/JP  <b>Japan Patent Office</b> 3-4-3, Kasumigaseki, Chiyoda-ku, Tokyo 100-8915, Japan	Authorized officer ISHIKAWA Yoshifumi Telephone No. +81-3-3581-1101 Ext. 3377

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## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/JP2005/002533

Box No. I

Basis of the report

1. With regard to the **language**, this report is based on:

- ☒ the international application in the language in which it was filed
- ☐ a translation of the international application into \_\_\_\_\_, which is the language of a translation furnished for the purposes of:
- ☐ international search (Rules 12.3(a) and 23.1(b))
  - ☐ publication of the international application (Rule 12.4(a))
  - ☐ international preliminary examination (Rules 55.2(a) and/or 55.3(a))

2. With regard to the **elements** of the international application, this report is based on (*replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report*):

- ☒ the international application as originally filed/furnished
- ☐ the description:
- pages \_\_\_\_\_ as originally filed/furnished
- pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- ☐ the claims:
- Nos. \_\_\_\_\_ as originally filed/furnished
- Nos.\* \_\_\_\_\_ as amended (together with any statement) under Article 19
- Nos.\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- Nos.\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- ☐ the drawings:
- sheets/figs \_\_\_\_\_ as originally filed/furnished
- sheets/figs \* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- sheets/figs \* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- ☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing.

3. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages \_\_\_\_\_
- ☐ the claims, Nos. \_\_\_\_\_
- ☐ the drawings, sheets/figs \_\_\_\_\_
- ☐ the sequence listing (*specify*): \_\_\_\_\_
- ☐ any table(s) related to sequence listing (*specify*): \_\_\_\_\_

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

- ☐ the description, pages \_\_\_\_\_
- ☐ the claims, Nos. \_\_\_\_\_
- ☐ the drawings, sheets/figs \_\_\_\_\_
- ☐ the sequence listing (*specify*): \_\_\_\_\_
- ☐ any table(s) related to sequence listing (*specify*): \_\_\_\_\_

\* If item 4 applies, some or all of those sheets may be marked "superseded."

## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/JP2005/002533

**Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

## 1. Statement

Novelty (N)	Claims	1-12	YES
	Claims		NO
Inventive step (IS)	Claims		YES
	Claims	1-12	NO
Industrial applicability (IA)	Claims	1-12	YES
	Claims		NO

## 2. Citations and explanations(Rule 70.7)

Document 1:JP 10-263799 A (MITSUBISHI ALUMINUM CO.,LTD.),1998.10.06,  
Page 1 to 8

Document 2:JP 11-131254 A (DENSO CORPORATION), 1999.05.18,  
Page 1 to 10 & US 6306226 B1 & EP 0911427 A1

Document 3:JP 4-288494 A (HITACHI CABLE, LTD.), 1992.10.13,  
Page 1 to 3(No Family)

Document 4:JP 11-77292 A (DENSO CORPORATION), 1999.03.23,  
Paragraph [ 0033]

Document 5:JP 2003-130585 A (MITUBISHI HEAVY INDUSTRIES.LTD.),  
2003.05.08, Page 1 to 6

Document 6:JP 2000-204427 A (SUMITOMO LIGHT METAL INDUSTRIES, LTD.),  
2000.07.25, Paragraph [ 0008]

Document 7:JP 11-92848 A (NIPPON LIGHT METAL CO.,LTD),  
1999.04.06,Paragaraph [ 0029]

The subject matters of claims 1,2,3,4,5,11 and 12 do not appear to involve inventive steps over the document 1,2,3 and 4 cited in the ISR.

Document 1 discloses a method for manufacturing an aluminum heat exchanger, comprising the step of:

forming a Zn thermally sprayed layer on a surface of an aluminum flat tube core with the Zn amount of 3 to 20 g/m<sup>2</sup>; and

obtaining a heat exchanger core by alternatively arranging the tube and an aluminum fin and brazing them.

Document 2 discloses a way to impart high hydrophilicity and corrosion resistance to a surface of a heat exchanger by at first performing a chemical etching treatment on the surface and second, forming a chemical conversion treatment coat on it and finally, forming a protective layer on the coat.

Because both document 1 and 2 are concerned mutually related fields, a skilled person in the art would easily conceive the idea of applying the way, disclosed in document 2, to the method for manufacturing an aluminum heat exchanger, disclosed in document 1.

## Supplemental Box

In case the space in any of the preceding boxes is not sufficient.

Continuation of: V.2 Citations and explanations

Claim 1 includes the word "comprising" and that means, claim 1 may contain some other elements which are not written explicitly in the claim.

Therefore claim 1 may contain the forming a protective layer on the chemical conversion coat and that's the reason why the subject matter of claim 1 does not appear to involve an inventive step over the document 1 and 2.

In addition, Document 3 discloses a way to form a zirconium protective layer on a surface of a copper fin to enhance corrosion resistance to the surface and document 4 discloses a way to form a chromate protective layer on a surface of a heat exchanger for the same purpose.

The subject matter of claim 6 does not appear to involve an inventive step over the document 1,2,3,4 and 5 cited in the ISR.

Document 5 discloses a way to perform a chemical conversion treatment on a surface of an aluminum fin with zirconium of 50 to 120 mg/m<sup>2</sup>.

The subject matter of claim 7 does not appear to involve an inventive step over the document 1, 2,3,4,5 and 6 cited in the ISR.

Document 7 discloses an aluminum tube core contains Cu: 0.3 to 1.0 mass% and Mn: 0.6 to 2.0 mass%.

The subject matter of claim 8,9 and 10 do not appear to involve inventive steps over the document 1, 2,3,4,5 and 6 cited in the ISR.

Document 7 discloses an aluminum fin contains Zn: 1.2 to 4.0 mass%.

A skilled person in the art would regard it as a design procedure to change an area rate of a region of a surface of the heat exchanger tube covered with Zn.